

5

**IN THE EUROPEAN PATENT OFFICE**

**APPLICANT:** THE TIMKEN COMPANY

**INT. APPL. NO.:** PCT/US03/22135

10 **INT. FILING DATE:** 16 July 2003 (16.07.03)

**FOR:** SPEED SENSOR AND METHOD OF ATTACHING THE SAME

St. Louis, Missouri, U.S.A.

30 September 2004

Attorney Docket No. TIMK 8429WO

15

**SECOND WRITTEN REPLY**

This paper responds to the second Written Opinion mailed from the European Patent Office on 27 August 2004 in connection with the above-designated international patent application. Applicant submits herewith a new set of claims containing claims 1-13 and requests that it be substituted for the set of claims presented with the previous Written Reply. Claims 1 and 8 of the new set stand in independent condition – one being directed to a combination of components including a sensor and the other to the process of installing the sensor.

In the second Written Opinion, the examiner cited a new reference, namely European published application 0,694,765 (Ref. D1). According to the examiner, Reference D1 renders applicant's invention, as presented in the claims that accompanied the earlier Written Reply, obvious Reference D1 appears to show a speed sensor having a housing provided with an ear containing a hole apparently designed to receive a screw for securing the housing to a supporting structure. The examiner reasons that the screw can be turned down against the ear with enough force to leave a "trace" indentation which afterwards may be used to relocate the sensor in the same position. Applicant disagrees.

Owing to the configuration of the ear in Reference D1, a screw turned down against it would do no more than deform the ear within the elastic limits of the material from which it is formed, so that once the

5 screw was backed off the material would recover and the elastic deformation would disappear. In other words, a permanent deformation would not exist. But even if a plastic deformation did occur and produce a "trace" indentation, the trace would be so shallow as to be useless. It certainly would not amount to the type of indentation disclosed in the application and contemplated by the claims.

10 Claim 1, which is directed to a combination including a sensor having a housing formed from a deformable material along a slot in it, specifies that the deformable material along the slot includes a permanent indentation that is formed by a screw. The fact that the deformation is permanent distinguishes over Reference D1 which suggests no more than an elastic deformation, if that. Be that as it may, the claim even distinguishes over the plastic deformation envisioned by the examiner, because it specifies that the indentation is of a configuration that prevents displacement of the slot along the screw when the screw is received in the slot. The basis of this recitation resides in the application as a whole including Figs. 7 and 8 and in the sentence bridging lines 5-8 on page 7 and the sentences beginning of page 7 and continuing onto page 8. Whatever indentation the sensor of Reference D1 may sustain, it is at best superficial -- and applicant does not concede that even a superficial indentation will develop -- that indentation certainly would not provide the capability of holding the sensor in a fixed position so that it cannot be displaced along a slot.

25 As the examiner recognizes, Reference D1 does not disclose a housing having the indentation called for in the claims and it seems speculative at best to assume that it would acquire any type of indentation at all. Reference D1 does not render obvious the deep indentation called for in claim 1 and hence claim 1 is characterized by an inventive step.

30 Dependent claims 2 and 3 call for the indentation in a rim, whereas dependent claims 4 and 5 specify that it is in the side walls of

5 the slot. Reference D1 does not suggest these features, nor do the other references.

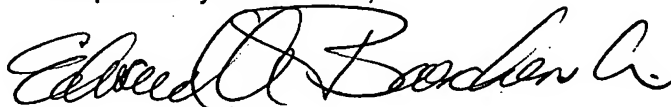
Independent claim 8 is directed to the process of installing the sensor such that the sensor can be easily again installed in the same position. It too calls for a permanent indentation along the slot in the  
10 housing -- an indentation that is deep enough to prevent the housing from displacing along the slot when a screw is received in the indentation. What has been said with regard to claim 1 applies to claim 8 as well.

Both independent claims 1 and 8 contain limitations that serve to  
15 distinguish them over German Offenlegusschrift 100 34 844 (Ref. D2) equally as well as their counterparts in the previous set of claims. The examiner has acknowledged that those earlier claims possessed both novelty and an inventive step insofar as Reference D2 is concerned.

The claims remain in the unified format, not the two-part format,  
20 inasmuch as some of the countries for which national applications are contemplated -- the United States being one -- do not require the two-part format. The same holds true with regard to reference numerals. In this regard, see Rule 6.2(c) which seems to permit a good measure of latitude insofar as claim format is concerned.

25 In view of the foregoing, reconsideration and a favorable International Preliminary Examination Report as to all claims -- namely, claims 1-13 -- are respectfully requested.

Respectfully submitted,

30 

Edward A. Boeschenstein

Reg. No. 22,986

35 Polster, Lieder, Woodruff & Lucchesi, L.C.

12412 Powerscourt Dr. Suite 200

St. Louis, Missouri 63131, USA

Phone (314) 238-2400

Fax (314) 238-2401

Claims

1. In combination with a mounting surface out of which a threaded hole opens and with a target which rotates in front of the surface about an axis that is oriented at a steep angle with respect to the surface,  
5 and with a screw having a threaded shank that threads into the hole and a head at the end of the shank;

a sensor for monitoring the rotation of the target; said sensor comprising:

10 a housing located along the mounting surface and having a slot that is aligned with the threaded hole, the housing along the slot being formed from a deformable material and containing a permanent indentation that receives a portion of the screw, the indentation having been formed by the screw itself and being of a configuration that prevents displacement of the slot along the screw when the portion of the screw is in the indentation; and

15 a sensing element located in the housing and being capable, in response to rotation of the target, of producing a signal that reflects the angular velocity of the target;

whereby the sensor, should it be removed from the mounting surface by withdrawing the screw from the threaded hole, may be reinstalled in the  
20 same position by again threading the screw into the hole such that the portion of it is received in the indentation.

2. The combination according to claim 1 wherein the housing has a front face; wherein the slot opens out of the front face; and wherein the deformable material forms a rim along the slot, with the rim projecting  
25 beyond the front face.

3. The combination according to claim 2 wherein the rim on the housing contains the indentation and the head of the screw is received in the indentation.

4. The combination according to claim 1 wherein the housing  
30 has a front face and a back face; wherein the slot opens out of both faces and has side walls which taper downwardly toward the back face so that the

slot is wider at the front face than it is at the back face; and wherein the deformable material is located along the side walls of the slot.

5        5.        The combination according to claim 4 wherein the indentation opens out of the tapered side walls of the slot and is configured to receive the shank of a screw.

6.        The combination according claim 1 wherein the slot is one of two slots in the housing, and the slots are parallel; wherein the threaded hole is one of two holes that open out of the mounting surface; and wherein the screw is one of two screws, with each screw being in a different slot and threaded into a different hole.

7.        The combination according to claim 1 wherein the housing includes a sacrificial rim which projects beyond the sensing element a prescribed distance to establish a known gap between the target and the sensing element.

15        8.        A process for installing a speed sensor against a mounting surface out of which a threaded hole opens so that the speed sensor can monitor the rotation of a target that revolves in front of the mounting surface about an axis oriented at a steep angle with respect to the surface, the sensor including a housing having a slot and along the slot being formed from a deformable material, the sensor further including a sensing element located in the housing and being capable, in response to rotation of the target, of producing a signal that reflects the angular velocity of the target, said process comprising:

25        placing the housing of the sensor against the mounting surface with the slot in the housing aligned with the threaded hole that opens out of the mounting surface;

inserting a screw having a threaded shank and a head into the slot in the housing;

30        positioning the housing along the mounting surface with the correct gap between the sensing element and the target;

with a portion of the screw forming a permanent indentation in the housing along the slot, with the indentation being configured such that,

when the portion of the screw that formed it is in the indentation, the housing cannot be displaced along the slot; and

threading the screw into the threaded hole.

5 9. The process according to claim 8 wherein the head of the screw forms the indentation.

10 10. The process according to claim 8 wherein the housing has a front face; wherein the slot opens out of the front face; wherein the deformable material forms a rim along the slot, with the rim projecting beyond the front face, and wherein the head of the screw forms the indentation in the rim.

11. The combination according to claim 8 wherein the shank of the screw forms the indentation.

15 12. The process according to claim 8 wherein the housing has a front face and a back face; wherein the slot opens out of both faces and has side walls which taper downwardly toward the back face so that the slot is wider at the front face than it is at the back face; wherein the deformable material is located along the side walls of the slot, and wherein the shank of the screw forms the indentation in the side walls of the slot.

20 13. The process according to claim 8 and further comprising:  
withdrawing the screw from the threaded hole;  
removing the sensor from the mounting surface;  
thereafter placing the sensor along the mounting surface with its slot aligned with the hole;

25 inserting the screw through the slot and threading it into the hole, with said portion of the screw being received in the indentation;

whereby the sensor assumes the same position along the mounting surface.